We claim:

1. A process for the surface modification of a polymer substrate, the process comprising the steps of:

a. absorbing a swelling monomer into the polymer substrate in order to swell the polymer substrate;

b. polymerizing the swelling monomer for a period of time;

c. removing the polymer substrate from the swelling monomer at the end of the period of time.

2. The process of claim 1, wherein the polymer substrate is selected from the group consisting of: acrylics, acrylonitrile-butadiene-styrene copolymer, chlorinated polyvinylchloride, EPDM rubber, natural rubber, neoprene, nitrile rubber, polyethylene, polypropylene, polystyrene, polyurethanes, polyvinylchloride, silicones, thermoplastic elastomers, and vinylidene fluoride-hexafluoropropylene copolymer.

3. The process of claim 1, wherein the swelling monomer is absorbed into the polymer substrate in the presence of a solvent.

4. The process of claim 1, wherein the swelling monomer comprises at least one crosslinking monomer.

5. The process of claim 1, wherein the swelling monomer comprises at least one functional monomer.

6. The process of claim 1, wherein the swelling monomer comprises at least one crosslinking monomer and at least one functional monomer.

7. The process of claim 1, wherein the swelling monomer is selected from the group consisting of: acrylamides, methacrylamides, allyl crosslinkers, acrylates, methacrylates, and vinyl crosslinkers.

8. The process of claim 1, wherein the absorption of the swelling monomer occurs for a period of time that is less than or equal to approximately 96 hours.

9. The process of claim 1, wherein the absorption of the swelling monomer occurs at a temperature of between approximately -20°C to 150°C.

10. The process of claim 1, wherein an initiator initiates the polymerization of the swelling monomer.

11. The process of claim 10, wherein the initiator is ultraviolet radiation.

12. The process of claim 10, wherein the initiator is heat.

13. The process of claim 10, wherein the initiator is ionization radiation.

14. The process of claim 10, wherein the initiator is a chemical catalyst.

15. The process of claim 14, wherein the initiator is selected from the group consisting of: azo-initiators, peroxide initiators, and UV/visible initiators.

16. The process of claim 14, wherein the initiator is present in the aqueous solution in a concentration of less than or equal to 10%.

17. The process of claim 1, wherein the polymerization step is carried out for a period of time between approximately 10 seconds to 72 hours.

18. The process of claim 1, wherein the polymerization step is carried out at a temperature of between approximately -78°C to 150°C.

19. The process of claim 1, wherein the polymer is silicone.

20. The process of claim 19, wherein heparin will adhere to the surface of the silicone polymer following its removal from the swelling monomer.

21. A process for the surface modification of a polymer substrate, the process comprising the steps of:

a. absorbing a swelling monomer into the polymer substrate for a period of time in order to swell the polymer substrate;

b. removing the swollen polymer from the swelling monomer;

c. transferring the swollen polymer to a reaction mixture

containing at least one functional monomer;

d. polymerizing the functional monomer in the reaction mixture containing the swollen polymer substrate for a period of time; and

e. removing the polymer from the reaction mixture.

22. The process of claim 21, wherein the polymer substrate is selected from the group consisting of: acrylics, acrylonitrile-butadiene-styrene copolymer, chlorinated polyvinylchloride, EPDM rubber, natural rubber, neoprene, nitrile rubber, polyethylene, polypropylene, polystyrene, polyurethanes, polyvinylchloride, silicones, thermoplastic elastomers, and vinylidene fluoride-hexafluoropropylene copolymer.

23. The process of claim 21, wherein the swelling monomer is absorbed into the polymer substrate in the presence of a solvent.

24. The process of claim 21, wherein the swelling monomer comprises at least one crosslinking monomer.

25. The process of claim 21, wherein the swelling monomer comprises at least one functional monomer.

26. The process of claim 21, wherein the swelling monomer comprises at least one crosslinking monomer and at least one functional monomer.

27. The process of claim 21, wherein the swelling monomer is selected from the group consisting of: acrylamides, methacrylamides, allyl crosslinkers, acrylates, methacrylates, and vinyl crosslinkers.

28. The process of claim 21, wherein the absorption of the swelling monomer occurs for a period of time that is less than or equal to approximately 96 hours.

29. The process of claim 21, wherein the absorption of the swelling monomer occurs at a temperature of between approximately -20°C to 150°C.

30. The process of claim 21, wherein an initiator initiates the polymerization of the swelling monomer.

31. The process of claim 30, wherein the initiator is ultraviolet radiation.

32. The process of claim 30, wherein the initiator is heat.

33. The process of claim 30, wherein the initiator is ionization radiation.

34. The process of claim 30, wherein the initiator is a chemical catalyst.

35. The process of claim 34, wherein the initiator is selected from the group consisting of: azo-initiators, peroxide initiators, and UV/visible initiators.

36. The process of claim 34, wherein the initiator is present in the aqueous solution in a concentration of less than or equal to 10%.

37. The process of claim 21, wherein the polymerization step is carried out for a period of time between approximately 10 seconds to 72 hours.

38. The process of claim 21, wherein the polymerization step is carried out at a temperature of between approximately -78°C to 150°C.

39. The process of claim 21, wherein the polymer is silicone.

40. The process of claim 39, wherein heparin will adhere to the surface of the silicone polymer following its removal from the swelling monomer.

41. The process of claim 21, wherein the functional monomer has at least one amine group.

42. The process of claim 21, wherein the functional monomer has at least one hydroxyl group.

43. The process of claim 21, wherein the functional monomer has at least one carboxyl group.

44. The process of claim 21, wherein the functional monomers are selected from the group consisting of: acrylamides, methacrylamides, acrylates, methacrylates, allyl monomers, vinyl monomers, and styrenic monomers

45. The process of claim 21, wherein the functional monomers are present in the reaction mixture in a concentration of between approximately 0.01% to 100%.

46. The process of claim 21, wherein the reaction mixture further contains at least one solvent.

47. A process for the surface modification of a silicone substrate, the process comprising the steps of:

a. absorbing ethylene glycol dimethacrylate into silicone for between approximately 0.1 hours to 72 hours at a temperature of between approximately 0°C and 100°C in order to swell the silicone;

b. removing the swollen silicone from the ethylene glycol dimethacrylate;

c. transferring the swollen silicone into an aqueous solution containing 2-aminoethyl methacrylate hydrochloride in a concentration of between approximately 0.1% and 50% and 2,2'-azobis(2-methylpropionamidine) dihydrochloride in a concentration of between approximately 0.1% and 10%;

d. contacting the swollen silicone with the 2-aminoethyl methacrylate hydrochloride and the 2,2'-azobis(2-methylpropionamidine) dihydrochloride at a temperature of between approximately 30°C and 80°C for between approximately 0.1 hours and 24 hours; and

e. removing the silicone from the aqueous solution.

48. A process for forming a surface interpenetrating polymer network on a silicone substrate, the process comprising the steps of:

a. absorbing bis(2-methacryloxyethyl) phosphate into silicone for between approximately 0.1 hours and 72 hours at room temperature in order to swell the silicone;

b. removing the swollen silicone from the bis(2-methacryloxyethyl) phosphate;

c. transferring the swollen silicone into an aqueous solution containing 2-aminoethyl methacrylate hydrochloride in a concentration of between approximately 0.1% and 50% and 2-hydroxy-2-methyl-1-phenylpropanone in a

concentration of between approximately 0.1% and 10%;

d. contacting the swollen polymer with the 2-aminoethyl methacrylate hydrochloride and the 2-hydroxy-2-methyl-1-phenylpropanone at a temperature of between approximately 30°C and 80°C for between approximately 1 minute to 10 hours with UV radiation; and

e. removing the silicone from the aqueous solution.

49. A process for the heparinization of a polymer treated with the process of claim 1, the process comprising the steps of:

a. adding an amount of heparin sodium and citric acid to deionized water to create a heparin solution;

b. adjusting the pH of the heparin solution to between approximately 2 and 5;

c. adding $NaCNBH_3$ to the heparin solution;

d. adding a polymer substrate material that has previously undergone the process of claim 1 to the heparin solution;

e. reacting the polymer substrate material in the heparin solution;

f. removing the polymer material from the heparin solution;

g. rinsing the polymer material with deionized water and a sodium borate solution;

h. adding the polymer material into a sodium borate solution with polyethylenimine;

i. removing the polymer material from the sodium borate solution and rinsing the polymer material with deionized water;

j. adding the polymer material back into the heparin solution;

k. reacting the polymer material in the heparin solution;

l. removing the polymer material from the heparin solution; and

m. rinsing the polymer material with a sodium borate solution and deionized water.

50. The heparinized material of claim 49.

51. The process of claim 49, wherein the polymer is treated with the process of claim 21.

52. The heparinized material of claim 51.

53. The process of claim 49, wherein the polymer is treated with the process of claim 47.

54. The heparinized material of claim 53.

55. The process of claim 49, wherein the polymer is treated with the process of claim 48.

56. The heparinized material of claim 55.

57. The process of claim 49, wherein the polymer substrate is silicone.

58. The heparinized silicone material formed by the process of claim 57.

59. The process of claim 49, wherein the polymer substrate is a silicone intraocular lens.

60. The heparinized silicone intraocular lens formed by the process of claim 59.

61. The process of claim 49, wherein the polymer substrate is a silicone contact lens.

62. The heparinized silicone contact lens formed by the process of claim 61.

63. The polymer substrate having the surface modification formed by the process of claim 1.

64. The polymer substrate having the surface modification formed by the process of claim 21.

65. The polymer substrate having the surface modification formed by the process of claim 47.

66. The polymer substrate having the surface modification formed by the

process of claim 48.

67. A silicone material having the surface modification produced by the process of claim 1.

68. A silicone material having the surface modification produced by the process of claim 21.

69. A silicone material having the surface modification produced by the process of claim 47.

70. A silicone material having the surface modification produced by the process of claim 48.

71. A silicone intraocular lens having the surface modification formed by the process of claim 1.

72. A silicone intraocular lens having the surface modification formed by the process of claim 21.

73. A silicone intraocular lens having the surface modification formed by the process of claim 47.

74. A silicone intraocular lens having the surface modification formed by the process of claim 48.

75. A silicone contact lens having the surface modification formed by the process of claim 1.

76. A silicone contact lens having the surface modification formed by the process of claim 21.

77. A silicone contact lens having the surface modification formed by the process of claim 47.

78. A silicone contact lens having the surface modification formed by the process of claim 48.